WHAT IS CLAIMED IS:

1. A process for controlling the amount of insoluble gas trapped in a mass of molten silicon contained within a crucible having a sidewall formation and a bottom, the process comprising:

(a) loading pieces of polysilicon into the crucible, the loaded crucible containing cavities between adjacent pieces of polysilicon and between pieces of polysilicon and the sidewall formation and the bottom of the crucible, the cavities being filled with a gas,

(b) placing the loaded crucible into a crystal pulling apparatus;

(c) sealing the crystal pulling apparatus after the loaded crucible has been placed therein;

(d) evacuating gas from the sealed crystal pulling apparatus to reduce the pressure within the crystal puller and to reduce the amount of gas occupying the cavities; and

(e) backfilling the evacuated crystal pulling apparatus with a backfill gas to increase the pressure within the crystal puller and to increase the amount of gas occupying the cavities, said backfill gas having a mole fraction of at least about 0.5 of a gas selected from the group consisting of hydrogen and nitrogen.

2. The process as set forth in claim 1 wherein steps (d) and (e) are repeated at least once.

3. The process as set forth in claim 1 wherein steps (d) and (e) are repeated at least twice.

4. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of at least about 0.6.

5. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of at least about 0.7.

6. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of at least about 0.8.

7. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of at least about 0.9.

8. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of about 1.

9. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of at least about 0.5 of nitrogen.

10. The process as set forth in claim 1 wherein the backfill gas has a mole fraction of about 1 of nitrogen.

11. The process as set forth in claim 1 wherein the pressure is reduced in step (d) to a pressure of no more than about 700 millitorr.

12. The process as set forth in claim 1 wherein the pressure is reduced in step (d) to a pressure of no more than about 500 millitorr.

13. The process as set forth in claim 1 wherein the pressure is reduced in step (d) to a pressure of no more than about 100 millitorr.

14. The process as set forth in claim 1 wherein the pressure is reduced in step (d) to a pressure of no more than about 50 millitorr.

15. The process as set forth in claim 1 wherein the pressure in the backfilled evacuated crystal pulling apparatus after step (e) is about 100 Torr.

16. A process for controlling the amount of insoluble gas trapped in a mass of molten silicon contained within a crucible having a sidewall formation and a bottom, the process comprising:

(a) loading pieces of polysilicon into the crucible, the loaded crucible containing cavities between adjacent pieces of polysilicon and between pieces of polysilicon and the sidewall formation and the bottom of the crucible, the cavities being filled with a gas;

(b) placing the loaded crucible into a crystal pulling apparatus;

(c) sealing the crystal pulling apparatus after the loaded crucible has been placed therein;

(d) evacuating gas from the sealed crystal pulling apparatus to reduce the pressure within the crystal puller; and

(e) backfilling the evacuated crystal pulling apparatus with a backfill gas to increase the pressure within the crystal puller before a mass of molten silicon is formed in the crucible, said backfill gas having a mole fraction of at least about 0.5 of a gas selected from the group consisting of hydrogen and nitrogen.

17. The process as set forth in claim 16 wherein steps (d) and (e) are repeated at least once.

18. The process as set forth in claim 16 wherein steps (d) and (e) are repeated at least twice.

19. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of at least about 0.6.

20. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of at least about 0.7.

21. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of at least about 0.8.

22. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of at least about 0.9.

23. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of about 1.

24. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of at least about 0.5 nitrogen.

25. The process as set forth in claim 16 wherein the backfill gas has a mole fraction of about 1 of nitrogen.

26. The process as set forth in claim 16 wherein the pressure is reduced in step (d) to a pressure of no more than about 700 millitorr.

27. The process as set forth in claim 16 wherein the pressure is reduced in step (d) to a pressure of no more than about 500 millitorr.

28. The process as set forth in claim 16 wherein the pressure is reduced in step (d) to a pressure of no more than about 100 millitorr.

29. The process as set forth in claim 16 wherein the pressure is reduced in step (d) to a pressure of no more than about 50 millitorr.

30. The process as set forth in claim 16 wherein the pressure in the backfilled evacuated crystal pulling apparatus after step (e) is about 100 Torr.